

Review of Mississippi Power Company's Proposed CCR Project

Comments on Mississippi Power Company's
Application before the Mississippi Public Service
Commission for a Certification of Public
Convenience and Necessity for Environmental
Compliance Activities in Docket 2019-UA-116

Prepared for Sierra Club

September 30, 2019

AUTHORS

Devi Glick

Shelley Kwok

Jamie Hall

Rachel Wilson

CONTENTS

1.	INTRODUCTION	1
2.	MPC HAS PRESENTED NO EVIDENCE THAT MEETING THE COMPLIANCE DEADLINE OF OCTOBER 2020 AND CONTINUING TO OPERATE PLANT DANIEL SERVES THE PUBLIC CONVENIENCE AND NECESSITY RELATIVE TO ALTERNATIVES.....	2
3.	MPC HAS NOT CONDUCTED ADEQUATE ANALYSIS TO JUSTIFY CONTINUED OPERATION OF PLANT DANIEL (INCLUDING THE PLANNED CCR PROJECT COSTS).....	5
4.	MPC HAS NOT DEMONSTRATED A NEED FOR PLANT DANIEL OTHER THAN FOR TRANSMISSION PURPOSES.....	9
5.	MPC SHOULD PRESENT AN UPDATED AND CORRECTED NPV ANALYSIS OF THE COSTS FOR PLANT DANIEL TO COMPLY WITH ALL CCR REQUIREMENTS ASSUMING A 2023 (OR EARLIER) DATE FOR PLANT RETIREMENT AND COAL ASH POND CLOSURE	10
6.	CONCLUSIONS.....	10

1. INTRODUCTION

On July 9, 2019, Mississippi Power Company (MPC or the Company) submitted to the Mississippi Public Service Commission a petition to obtain a Certification of Public Convenience and Necessity (CPCN) for environmental compliance activities relating to waste disposal under the Coal Combustion Residuals (CCR) rule for the Plant Victor J. Daniel Electric Generating Facility in Jackson County Mississippi (Plant Daniel). The CCR project has three components: 1) closure of the existing coal ash pond; 2) construction of a low volume wastewater (LVW) treatment facility; and 3) conversion of the bottom ash collecting facilities at the plant.¹

MPC is requesting that the Mississippi Public Service Commission approve MPC's share of the project costs, totaling \$62.5 million.²

The Company claims that the CCR project is required to meet two needs: 1) compliance with the CCR rule as required by the United States Environmental Protection Agency (EPA); and 2) transmission constraints. Specifically, MPC claims that:

1. The Company must cease placing all CCR and non-CCR waste streams from Plant Daniel in the current coal ash pond, convert to bottom ash handling, and construct a new LVW facility by October 2020. In order to meet the October 2020 EPA CCR deadline, the Company asserts that it must begin construction of the CCR project by November 2019;³ and
2. The Company must make transmission improvements prior to the retirement of Plant Daniel to avoid transmission constraints on its system. The Company states that it cannot construct a transmission alternative prior to the purported October 2020 deadline, therefore Plant Daniel cannot be retired prior to the October 2020 deadline.⁴

Additionally, the Company requests that the Commission find that the two units at Plant Daniel have "significant remaining useful life."⁵

As described in the following sections of this report, we find that MPC has failed to establish that the CCR project investment as proposed is necessary or justified. MPC has also failed to demonstrate that installation of the CCR project represents the most prudent approach to addressing these issues. It has

¹ Mississippi Power Company Petition in Docket 19-UA-116. July 9, 2019.

² Mississippi Power Company Petition in Docket 19-UA-116. July 9, 2019.

³ Mississippi Power Proposed Order Approving Petition, Docket 19-UA-116, page 3; Direct Testimony of Mark P. Loughman on behalf of Mississippi Power Company, Docket 2019-UA-116, page 3.

⁴ Mississippi Power Proposed Order Approving Petition, Docket 19-UA-116, page 3; Direct Testimony of Mark P. Loughman on behalf of Mississippi Power Company, Docket 2019-UA-116, page 10-11.

⁵ Mississippi Power Proposed Order Approving Petition, Docket 19-UA-116, page 3.

also failed to evaluate alternative compliance approaches. This is inconsistent with the general requirements for supporting a CPCN application and is to the detriment of Mississippi ratepayers.

Our analysis shows that Plant Daniel has been operating uneconomically for at least three years. Continued operation of the plant is [REDACTED] to ratepayers, and any additional capital spending at Plant Daniel is unjustified. Granting of a CPCN is directly related to an establishment of "need" by the applicant. The only support that MPC offers around the need for Plant Daniel is related to the transmission constraints; however, there are alternative solutions to address the claimed constraints. MPC's justifications do not provide adequate support for continuing to operate a power plant that has been found to be uneconomical.

Considering these findings, we recommend that the Commission:

- Reject MPC's plan to turn the existing ash pond into an LVW facility at Plant Daniel;
- Reject MPC's plan to convert the bottom ash collecting facility at Plant Daniel;
- Require that MPC supplement its filing with an analysis to justify both the ongoing operation of Plant Daniel and the stated retirement dates of 2042 and 2046 for Units and 1 and 2, respectively; and
- Require that MPC present an updated net present value (NPV) analysis of the costs at Plant Daniel to comply with all CCR requirements, assuming a 2023 (or sooner) date for plant retirement and coal ash pond closure.

2. MPC HAS PRESENTED NO EVIDENCE THAT MEETING THE COMPLIANCE DEADLINE OF OCTOBER 2020 AND CONTINUING TO OPERATE PLANT DANIEL SERVES THE PUBLIC CONVENIENCE AND NECESSITY RELATIVE TO ALTERNATIVES

MPC's claims that the Company needs to invest in the CCR project center around two main points: 1) compliance with EPA CCR rules; and 2) avoiding transmission constraints that would arise upon the retirement of Plant Daniel. Contrary to practices that would normally support an application for a CPCN, MPC has done no evaluation of possible alternatives and has, in fact, omitted essential information around alternative compliance options (including the potential retirement of Plant Daniel) from its CPCN application and Proposed Order. In its Proposed Order, MPC also asserts that the continued operation of Plant Daniel represents "the only significant source of fuel diversity remaining in its fleet following the conversion of all their other coal units to natural gas."⁶ Finally, the Company asserts that there are employment and tax benefits contributed by the two units.

⁶ Mississippi Power Proposed Order Approving Petition, Docket 19-UA-116, page 2.

COMPLIANCE WITH CCR REGULATIONS

MPC will have to remove CCR waste from the current unlined pond at some point in the future in order to comply with the requirements of the CCR rule.⁷ However, MPC has evaluated only the single compliance strategy that it proposed in its application and Order and has not evaluated any alternatives that could also meet the requirements of the rule.

If Plant Daniel ceases operation by October 17, 2023, for example, EPA regulations allow CCR waste to be placed in the relevant ash pond beyond October 2020.⁸ Early plant retirement would make conversion of the bottom ash collection system unnecessary,⁹ saving ratepayers \$23.85 million.¹⁰ There would also be less low volume wastewater to treat and the scope of the LVW system would thus be different than currently proposed.¹¹ MPC has not conducted any engineering estimates for this alternative scope, but ratepayers would certainly save some portion of the original \$15.65 million project cost.¹²

MPC has acknowledged that this alternative retirement scenario exists¹³ and that it would in fact avoid some of the CCR capital costs (although it is unclear why there is still a cost associated with Dry Bottom Ash Conversion). The Company estimates that the net savings associated with a scenario in which Units 1 and 2 are retired on July 1, 2022 is \$45.3 million. These savings are shown in Table 1.

Table 1. MPC estimates of net savings from early retirement of Plant Daniel¹⁴

Environmental Capital Expenditures (\$millions)			
Description	Current Plan	Alternate Scenario	Cost (Savings)
Dry Bottom Ash Conversion	\$47.7	\$10.0	(\$37.7)
Permanent LVWT	\$24.0	\$10.9	(\$13.1)
Temporary LVWT	\$19.9	\$25.4	\$5.5
Total			(\$45.3)

TRANSMISSION CONSTRAINTS

⁷ Direct Testimony of Mark P. Loughman on behalf of Mississippi Power Company, Docket 2019-UA-116, page 4.

⁸ MPC response to MPUS 1-9 Supp, MPSC Docket No. 2019-UA-116.

⁹ MPC response to MPUS 1-13 Supp, MPSC Docket No. 2019-UA-116.

¹⁰ Application, Exhibit MPL-3.

¹¹ MPC response to MPUS 1-13, MPSC Docket No. 2019-UA-116.

¹² Application, Exhibit MPL-3.

¹³ MPC response to MPUS 1-13 Supp, Attachment A, MS Docket No, 2019-UA-116.

¹⁴ MPC response to MPUS 1-13 Supp, Attachment A, MS Docket No, 2019-UA-116.

MPC claims that the Company will face transmission constraints if Plant Daniel retires in advance of the Company completing transmission upgrades. There is no basis to assess the accuracy of this statement or evaluate alternatives because the Company has produced only a single page document with the results of its transmission analysis.¹⁵ It has not provided the actual transmission study or any other analysis to support the claim.

Even if retirement of Plant Daniel would result in transmission constraints, the Plant need not stay online for this purpose alone. There are other lower cost, lower impact transmission and resource solutions to alleviate transmission constraints than continuing to run aging, uneconomical coal units at a loss to ratepayers. These include, but are not limited to, changing dispatch of generating units, changing the operation of the transmission system, adding new generating resources, and load management practices that include energy efficiency and demand response.

In any event, MPC acknowledges that the Company has developed a construction schedule, under which it could complete the necessary transmission upgrade by July 1, 2022,¹⁶ allowing MPC to retire Plant Daniel, complete the required coal ash pond closure activities by the October 2023 CCR retirement extension deadline, and save customers significant compliance and forward-going operational costs. MPC asserts that there are scheduling and other risks associated with this plan, but provides no further details.¹⁷ Once again, there is no mention in MPC's CPCN application or the Company's Proposed Order that the Company has a transmission expansion plan that allows the retirement of Plant Daniel.

FUEL DIVERSITY AND ECONOMIC BENEFITS

MPC asserts that the continued operation of Plant Daniel provides fuel diversity benefits, as the two units at the Plant are the only ones in MPC's fleet that continue to run on coal. MPC also states that Plant Daniel provides job and economic benefits to Jackson County, Mississippi. There is no way to either evaluate or confirm these assertions, as MPC has provided no analytical support or quantification of those supposed benefits.

Fuel diversity was a benefit touted by utilities to manage gas price risk in the years in which gas prices were both high and extremely volatile; however, since the fracking boom, gas prices have remained consistently low. Today, the rising costs associated with burning coal present a greater risk to MPC customers. While coal prices have fallen since 2012, they spiked in recent years, increasing by nearly a third since 2017.¹⁸ To truly manage risk associated with fuel cost volatility MPC should instead seek to add zero-variable cost technologies—in the form of renewable resources—to its generating portfolio, rather than operating coal-fired units.

While Plant Daniel does provide both jobs and tax revenues, if replacement capacity were to be built at the same site, some portion of these benefits would remain in Jackson County. The addition of

¹⁵ MPC response to MPUS 1-8 Supp, MPSC Docket No. 2019-UA-116.

¹⁶ MPC response to MPUS 1-9 Supp, MPSC Docket No. 2019-UA-116.

¹⁷ MPC response to MPUS 1-9 Supp, MPSC Docket No. 2019-UA-116.

¹⁸ EIA 923 data on fuel receipts available at <https://www.eia.gov/electricity/data/eia923/>

replacement capacity would also result in new constructions jobs in the region. Utilities, when making decisions to retire generating units, often relocate employees to other generating stations, resulting in no net loss of jobs. Finally, operating a plant uneconomically (as MPC is with Plant Daniel) passes higher costs on to ratepayers without delivering additional value. This is detrimental to the economic development of the region. MPC has not examined any of these possibilities in its Proposed Order.

3. MPC HAS NOT CONDUCTED ADEQUATE ANALYSIS TO JUSTIFY CONTINUED OPERATION OF PLANT DANIEL (INCLUDING THE PLANNED CCR PROJECT COSTS)

MPC RETIREMENT ANALYSIS FOR PLANT DANIEL

MPC is proposing to spend over \$60 million on Plant Daniel without presenting any robust analysis in the CPCN application or in the Proposed Order to justify the economic value to ratepayers of continuing to operate the units. The Company claims that it did perform retirement analysis on Plant Daniel in June 2018, March 2019, and August 2019.¹⁹

MPC did not produce the input files and results workbooks for these analyses until September 27, 2019. We were not able to conduct a detailed review of the analysis given the time constraints. Our initial review finds that the analysis is flawed and was designed to consider only retrofitting Plant Daniel and did not evaluate all reasonable alternative resource options.

In its retirement analysis, MPC awards a [REDACTED] capacity value to its retrofitting scenario for Plant Daniel.²⁰ MPC currently does not have a capacity need—according to the Company's own reserve margin study²¹—[REDACTED]

[REDACTED] MPC does not rely on Plant Daniel as a significant source of baseload energy. Indeed, the plant operates at a 25 percent capacity factor.²³ Given that Plant Daniel operates only 25 percent of the time, [REDACTED] when a less expensive portfolio of renewable energy or market purchases could satisfy energy demand.

Additionally, MPC's retirement versus replacement analysis assumes that, going forward, Plant Daniel will operate at a much higher capacity factor than recent history would indicate is likely.²⁴ Plant Daniel

¹⁹ MPC response to SC-MPC-1-13, MS Docket No, 2019-UA-116.

²⁰ MPC response to SC-MPC-1-19, CONFIDENTIAL Attachment D, MS Docket No, 2019-UA-116.

²¹ MPC's Reserve Margin Plan filed in Docket No. 2018-AD-145 on August 6, 2018.

²² MPC response to SC-MPC-1-19, CONFIDENTIAL Attachment A, MS Docket No, 2019-UA-116.

²³ MPC response to SC-MPC-1-21, Attachment A, MS Docket No, 2019-UA-116.

²⁴ MPC response to SC-MPC 1-22, Attachment A, MS Docket No, 2019-UA-116.



has operated at below a 30 percent capacity factor every year since 2014, yet MPC projects, without justification, that Plant Daniel will operate at between a 32.79 percent and 64.55 percent capacity factor every year between now and 2035. This unwarranted assumption tends to inflate the future energy revenues from continuing to operate Plant Daniel and makes the plant look more profitable than it would under more realistic assumptions.

MPC also includes the cost of the transmission projects in its retirement analysis. Because the Company claims that the transmission projects are necessary regardless of any retirement decision, it is not appropriate to include the costs of those transmission projects as costs associated with retirement.²⁵ Those costs will be incurred regardless of retirement, and including them only as part of the Company's retirement scenario serves only to make any retirement appear more expensive.

A final point to note is that prior to the 2018 analysis, the Company had performed no detailed analysis for at least five years.²⁶ This gap in retirement analysis is concerning given that the EPA final CCR regulations were published in April 2015 and could have prompted closure as early as 2019. MPC waited until the CCR rule was revised (to extend the closure deadline) in March 2018 before it began conducting retirement analysis. MPC further waited until July 2019 to seek approval to undergo the CCR Projects, over four years after the initial regulations were published and one year after the revisions were published.

SYNAPSE RETIREMENT ANALYSIS FOR PLANT DANIEL

Synapse performed its own analysis of Plant Daniel using information provided by MPC. Data were supplemented from public sources where no Company information was provided. Our analysis shows that Plant Daniel has been operating uneconomically for the past three years, [REDACTED]

Our retrospective analysis finds that neither unit at Plant Daniel provided economic value to ratepayers over the last three years (2016 – 2018). Figure 1 shows Daniel Unit 1 and 2's energy value and cost streams, as well as the unit's net revenues between 2016 and 2018. We estimate Units 1 and 2 each lost more than \$35 million per year, with a total loss of nearly \$245 million during the three-year period.²⁷ Plant Daniel's uneconomic status is due to its high production costs relative to other generators in the

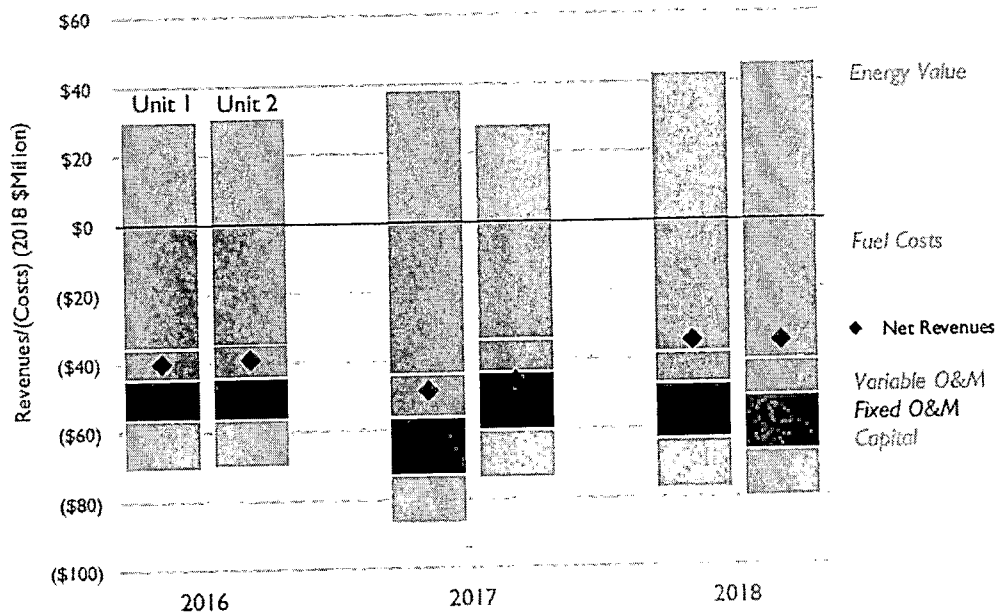
²⁵ MPC response to SC-MPC 1-19, Attachment B, MS Docket No, 2019-UA-116.

²⁶ MPC response to SC-MPC 1-13, MPSC Docket No. 2019-UA-116.

²⁷ We evaluated economic performance by comparing the hourly energy values for Plant Daniel to total unit costs. Historical hourly system lambdas are from SC-MPC-129 Attachment A. Hourly generation is from U.S. EPA. Air Markets Program Data, available at: <https://ampd.epa.gov/ampd/>. Fuel costs are based on EIA 923 fuel receipts. Unit-specific O&M costs are from S&P Global. On-going capital expenditures are based on EIA Assumptions to the Annual Energy Outlook 2019: Electricity Market Module, p. 14 (capital expenditures), available at: <https://www.eia.gov/outlooks/aeo/assumptions/pdf/electricity.pdf>.

Southern Company pool. Based on the hourly lambdas²⁸ provided by MPC,²⁹ we find that MPC could have purchased energy from other pool members for a lower cost than it paid to operate Plant Daniel.

Figure 1. Daniel Unit 1 historical energy value and costs, 2016-2018



Looking forward, we find that Plant Daniel [REDACTED] under projected mid gas prices and zero costs for carbon dioxide allowances (MPC's "MG0" scenario). Our analysis finds that each of the Plant Daniel units [REDACTED] through 2040 (Figure 3).³⁰ After considering the NPV of the total costs and energy values, we conclude that each unit [REDACTED] between now and 2040 (Figure 4).³¹

²⁸ Hourly lambdas represent "the marginal cost of the next megawatt of demand on the system and may be set by a generating resource owned by a pool member, a purchased power resource, or an energy purchase."

²⁹ MPC response to SC-MPC 1-29, MPSC Docket No. 2019-UA-116.

³⁰ We projected the economic performance of Plant Daniel by comparing avoided cost estimates to total unit costs. Avoided cost estimates were provided in SC-MPC 1-3, CONFIDENTIAL Attachment B (Scenario MG0 for mid-gas prices and no carbon price). Capacity factors were provided in SC-MPC 1-22, Attachment A. Fixed and Variable O&M were provided in SC-MPC 1-3, CONFIDENTIAL Attachment B. On-going capital expenditures are based on EIA Assumptions to the Annual Energy Outlook 2019: Electricity Market Module, p. 14 (capital expenditures), available at: <https://www.eia.gov/outlooks/aeo/assumptions/pdf/electricity.pdf>. Fuel price projections for subbituminous coal from Powder River Basin and bituminous coal from Rocky Mountain were provided in SC-MPC 1-3 CONFIDENTIAL Attachment A.

³¹ This assumes a discount rate of [REDACTED] based MPC response to SC-MPC 1-19, CONFIDENTIAL Attachment D, MS Docket No. 2019-UA-116.

Figure 2. Daniel Unit 1 projected revenues and costs under MPC scenario MG0, 2019-2040

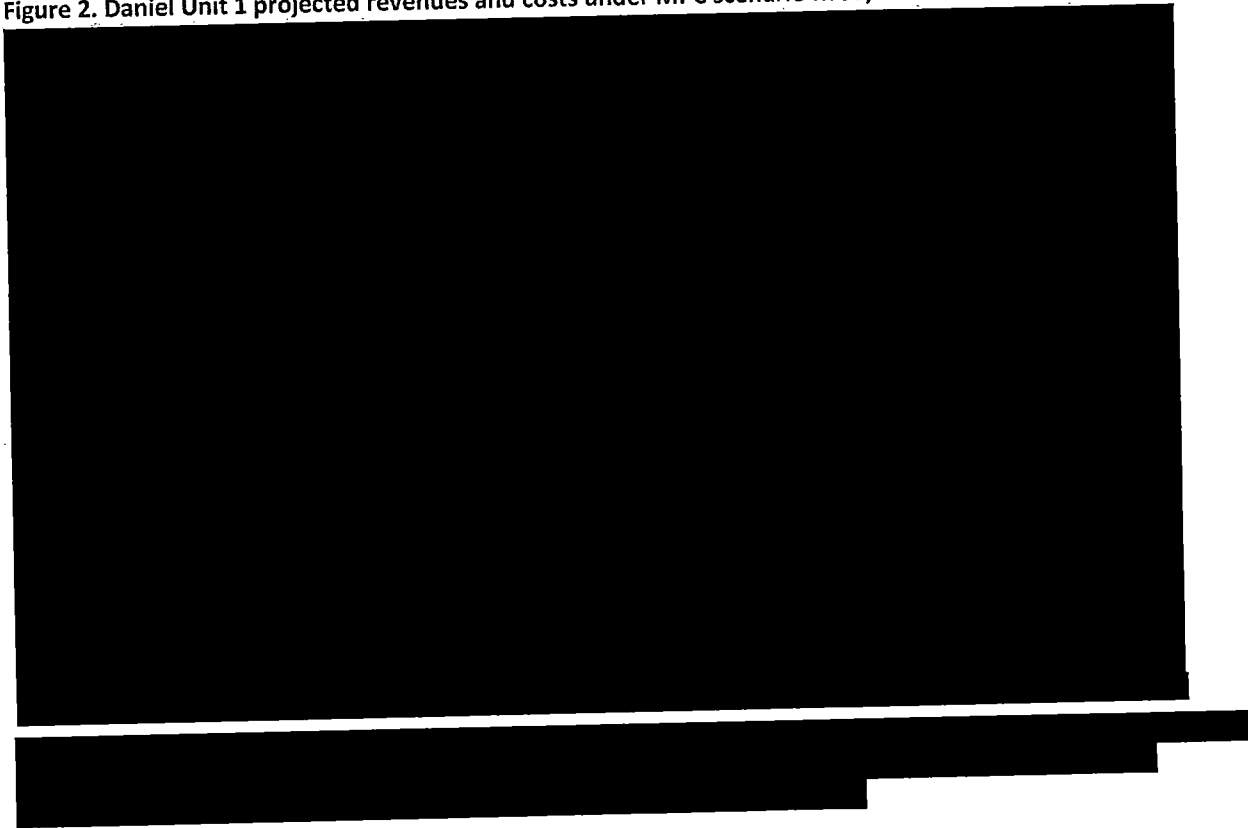


Figure 3. Cumulative net revenues for Daniel Units 1 and 2 under MPC scenario MG0, 2019-2040

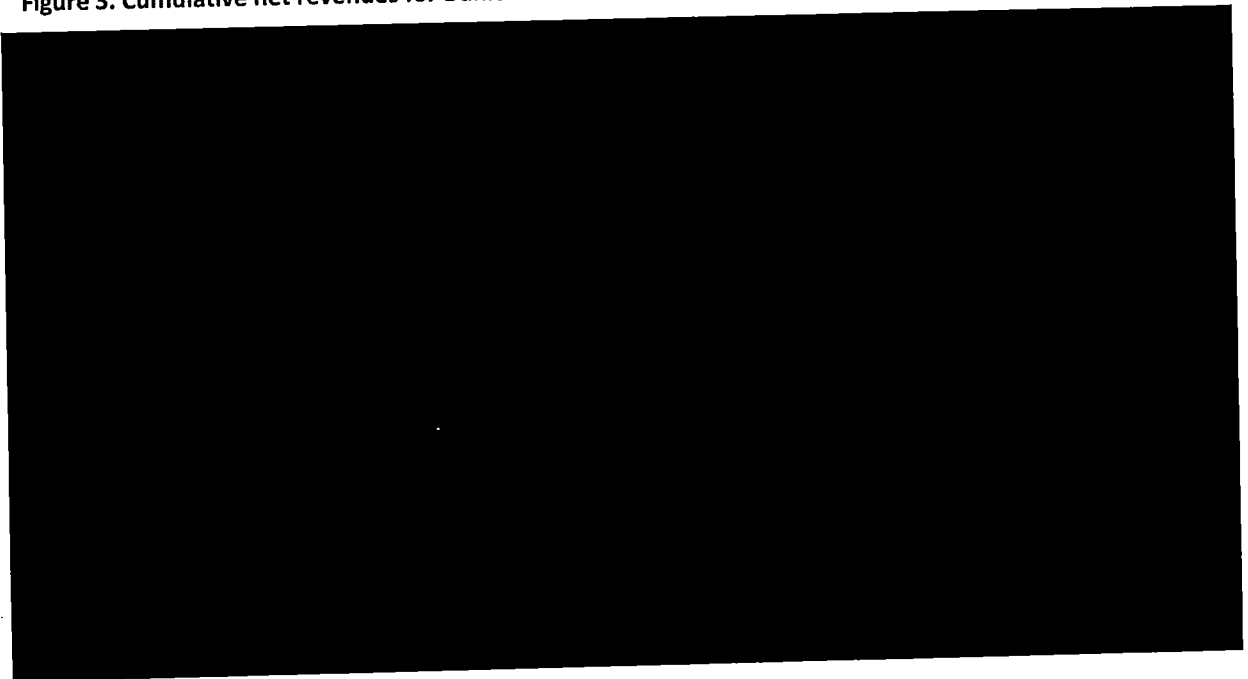
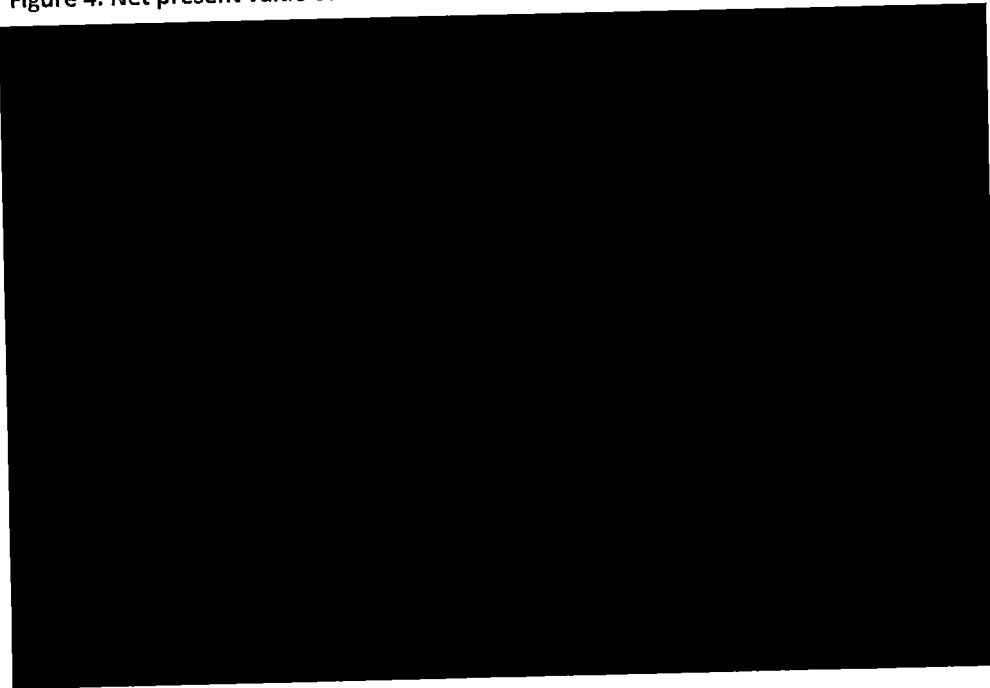


Figure 4. Net present value of total costs and energy value for Units 1 and 2 from 2019-2040



4. MPC HAS NOT DEMONSTRATED A NEED FOR PLANT DANIEL OTHER THAN FOR TRANSMISSION PURPOSES

MPC's application never discusses the need for any of the energy or capacity from Plant Daniel. Instead, MPC's application discusses the need for Plant Daniel to meet transmission constraints. As discussed above, MPC has acknowledged that the Company could meet the transmission constraints through an accelerated construction timeline for an alternative project.

Plant Daniel has been operating at low and decreasing capacity factors, indicating that the energy is not competitive and is not necessary to meet load. If MPC had any energy or capacity needs that arose based on the retirement of Plant Daniel, renewable alternatives, including solar and battery storage, could meet those needs at a much lower cost.

5. MPC SHOULD PRESENT AN UPDATED AND CORRECTED NPV ANALYSIS OF THE COSTS FOR PLANT DANIEL TO COMPLY WITH ALL CCR REQUIREMENTS ASSUMING A 2023 (OR EARLIER) DATE FOR PLANT RETIREMENT AND COAL ASH POND CLOSURE

MPC did not present alternative scenario or retirement analysis in its CPCN application or in the Company's proposed order. However, in discovery responses,³² MPC acknowledged that the Company did in fact evaluate an alternative scenario that included the following:

- Completion of the coal ash pond closure project by the October 2023 retirement-extension deadline for EPA CCR compliance.
- Retirement of Plant Daniel no later than July 2022 (or whatever date MPC determines is necessary to complete closure of the coal ash pond by the October 2023 deadline).
- Construction of transmission alternatives prior to the retirement of Plant Daniel (likely July 2022).
- Construction of an LVW facility, sized and scoped based on the early retirement of Plant Daniel.

As discussed in Section 3 above, the input assumptions used by MPC to perform its analysis are incorrect and unsupported. MPC should update its retirement analysis to robustly and accurately evaluate alternative scenarios to comply with the EPA CCR requirements by: 1) modeling a lower and more realistic capacity factor for Units 1 and 2; 2) removing the avoided costs associated with the transmission project; and 3) removing the avoided capacity cost. The cost of this alternative scenario should then be compared with the cost of MPC's application proposal to install the three-part CCR project and continue operating Plant Daniel through the planned retirement dates of 2042 and 2046.

Additionally, MPC should provide transparent and robust evidence that: 1) the region has a transmission constraint; 2) alternatives were evaluated in determining which transmission solution was most appropriate; and 3) the Company timeline to install the transmission solution cannot be accelerated to allow the retirement of Plant Daniel prior to July 2022.

6. CONCLUSIONS

In 2012, the Mississippi Public Service Commission approved \$300 million in a flue gas desulphurization (FGD) at Plant Daniel³³ to comply with EPA's Mercury and Air Toxics rule based on MPC's claims that

³² MPC response to MPUS 1-13 Supp, Attachment A, MPSC Docket No. 2019-UA-116

³³ Order in Mississippi Public Service Commission Docket No. 2010-UA-79. April 3, 2012.

Plant Daniel was a necessary baseload unit.³⁴ By the time the FGD was installed in 2016, however, the plant was operating at less than 40 percent capacity factor, far below baseload levels.³⁵

A portion of Plant Daniel remains undepreciated. If the two units were to retire, undepreciated costs would not be allowed in rate base absent approval from the Mississippi Commission. MPC could request cost recovery through an accelerated depreciation schedule, but arguably, the FGD is not considered "used and useful" after such a short time in operation.³⁶ The remaining FGD costs could end up stranded if the accelerated depreciation schedule is not approved. Thus, it appears that MPC may have an incentive then to install CCR upgrades and continue operating Plant Daniel in order to avoid seeking approval from the Commission for an accelerated depreciation schedule to continue collecting the cost of a minimally used FGD.

The evidence presented in this analysis shows two key components: 1) Plant Daniel is losing money and 2) there are lower cost alternatives to MPC's CCR proposal. If the CPCN for the \$62.5 million in environmental investments is approved, MPC will knowingly be making an imprudent investment. Plant Daniel will continue losing money for ratepayers with every kilowatt-hour that it generates, and ratepayers will be saddled with the bill for the project. The Commission should not allow MPC to add any unnecessary costs to ratepayers' already heavy burden and should reject the Company's request for approval to retrofit Plant Daniel again.

³⁴ Order in Mississippi Public Service Commission Docket No. 2010-UA-79. April 3, 2012.

³⁵ Mississippi Power self-reported data available at EPA Air Markets Database, <http://ampd.epa.gov/ampd/>

³⁶ Additionally, as discussed in the Sierra Club's Motion to Require Supplementation of the Petition and a Revised Scheduling Order, page 5, Mississippi Power's self-reported data from <https://ampd.epa.gov/ampd/> show recent spikes in SO₂ emission rates for Plant Daniel, indicating that the Company is only periodically operating the new scrubbers.